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21398	7590	09/12/2005	EXAMINER	
CORVIS CORPORATION INTELLECTUAL PROPERTY DEPARTMENT 7015 ALBERT EINSTEIN DRIVE COLUMBIA, MD 210469400			LI, SHI K	
			ART UNIT	PAPER NUMBER
			2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

81

<b>Office Action Summary</b>	<b>Application No.</b> 10/071,030	<b>Applicant(s)</b> DWIVEDI ET AL.	
	<b>Examiner</b> Shi K. Li	<b>Art Unit</b> 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2002.  
2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. FIG. 1 and FIG. 7 are objected to under 37 CFR 1.84(o) because there are no descriptive legends for the boxes. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11-17 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 11 recites the limitation "the output of the transmitter" in lines 6-7 of the claim. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 17 recites the limitation "the national network" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 20 depends on itself.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

Art Unit: 2633

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-2 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Koonen (U.S. Patent 6,674,966 B1).

Regarding claim 1, Koonen discloses in FIG. 5 a passive split optical network comprising a base station controller 14, a wavelength router 73 and a plurality of optical network units connected to the wavelength router. Koonen teaches in FIG. 8 structure of a base station controller comprising BTS 104 (equivalent to content server of instant claim) and an optical transmitter 134 for converting electrical signals into optical signals. Koonen teaches in FIG. 6 that the wavelength router comprises optical duplicators and optical switching elements.

Regarding claim 2, Koonen teaches in FIG. 6 that multicast signal  $\lambda 1$  is sent to ONU 72a and 72b only.

Regarding claim 4, Koonen teaches in FIG. 5 that the transmitter transmits multicast signals on a plurality of wavelengths.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-4, 7-9, 11-12 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (Y. Chang et al., "An Open-Systems Approach to Video on

Art Unit: 2633

Demand", IEEE Communications Magazine, May 1994) in view of Tajima (U.S. Patent 6,366,377 B1).

Regarding claim 1, Chang et al. discloses in FIG. 1 a video on demand (VOD) system comprising video server (content server of instant claim), head end and set-top boxes. Chang et al. teaches in FIG. 3 that the head-end comprises modulators (transmitter of instant claim) for converting electrical signal to optical signal and a plurality of optical electrical converter node (optical receivers of instant claim). The difference between Chang et al. and the claimed invention is that Chang et al. does not teach a multicast switch. Tajima teaches in FIG. 3 an optical transmission system comprising optical transmitters, optical switch and optical receivers. Tajima teaches in FIG. 5 an optical switch for the transmission system that supports broadcast and multicast (see col. 5, lines 29-30). One of ordinary skill in the art would have been motivated to combine the teaching of Tajima with the VOD system of Chang et al. because a multicast switch provides video programs to simultaneous viewers at reduced cost by sharing the cost of transmission between the video server and the multicast switch, which is close to the receivers, among the viewers. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a multicast/broadcast switch, as taught by Tajima, in the VOD system of Chang et al. because a multicast switch provides video programs to simultaneous viewers at reduced cost.

Regarding claim 2, Tajima teaches in col. 5, lines 29-30 that the optical switch of FIG. 5 supports multicast.

Regarding claim 3, Tajima teaches in FIG. 3 optical transmitter for transmit multicast signals on a single wavelength.

Art Unit: 2633

Regarding claim 4, Tajima teaches in FIG. 6 second embodiment for transmitting multicast signals on a plurality of wavelength.

Regarding claims 7-8, Chang teaches in FIG. 1 set-top box and teaches in p. 69, left col., fourth paragraph to use set-top box for interacting with the servers.

Regarding claim 9, Chang et al. indicates in the title that the system is for VOD.

Regarding claim 11, Chang et al. teaches in FIG. 3 a coax network including a plurality of terminals.

Regarding claim 12, Chang et al. teaches in FIG. 1 backbone network and illustrates in FIG. 6 a SONET ring as backbone network. It is understood that there are a plurality of community networks connected to the backbone network.

Regarding claim 15, Chang et al. teaches in FIG. 1 video server connected to backbone network.

Regarding claim 16, Chang et al. teaches in FIG. 1 video server in switching office.

Regarding claim 17, Chang et al. teaches in page 69, right col., third paragraph that servers can reside in local switching office, regional, national, or other specialized repositories.

11. Claim 5 and 18-20, with the assumption that claim 20 depends on either claim 18 or claim 19, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. and Tajima as applied to claims 1-4, 7-9, 11-12 and 15-17 above, and further in view of Guha (A. Guha, "The Evolution of Network Storage Architectures for Multimedia Applications", IEEE 1999).

Chang et al. and Tajima have been discussed above in regard to claims 1-4, 7-9, 11-12 and 15-17. Regarding claim 5 and 18, Chang teach in page 76, left col., second paragraph that distributing video information to local servers near subscriber sites reduces transmission cost and

Art Unit: 2633

access latency. That is, it is desirable to have multiple servers, each of which is local to group of subscribers. The same multicast/broadcast switch can be used for distributing video information from a regional or national server center to local servers. For example, Guha teaches in FIG. 7 (also referred to as FIG. 6) a storage area network (SAN) based video server for multimedia application such as VOD. One of ordinary skill in the art would have been motivated to combine the teaching of Guha with modified VOD system of Chang et al. and Tajima because SAN reduces transmission cost and access latency. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use SAN for VOD, as taught by Guha, in the modified VOD system of Chang et al. and Tajima because SAN reduces transmission cost and access latency.

Regarding claims 19-20, the modified VOD system of Chang et al., Tajima and Guha teaches to distribute video information from a regional or national server center to local servers or from one local server to other local servers.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al, Tajima and Guha as applied to claims 5 and 18-20 above, and further in view of Gemmell et al. (D. Gemmell et al., "Multimedia Storage Servers: A Tutorial", IEEE, 1995).

Chang et al, Tajima and Guha have been discussed above in regard to claims 5 and 18-20. The difference between Chang et al, Tajima and Guha and the claimed invention is that Chang et al, Tajima and Guha do not teach a plurality of transmitter for transmitting signals indicative of the status of the SAN. Gemmell et al. teaches in FIG. 6 architecture for a distributed hierarchical VOD server. Gemmell et al. teaches in p. 46, right col., third paragraph that the SAN provides an interface to let users query the database to locate pertinent video files and schedule their

Art Unit: 2633

retrieval. That is, the SAN includes transmitters for transmitting responses to users indicating its status. One of ordinary skill in the art would have been motivated to combine the teaching of Gemmell et al. with the modified VOD system of Chang et al., Tajima and Guha because the transmitters allow interactive responses to users and provide users with management capability for VOD services. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include transmitters for transmitting status of servers, as taught by Gemmell et al., in the modified VOD system of Chang et al., Tajima and Guha because the transmitters allow interactive responses to users and provide users with management capability for VOD services.

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. and Tajima as applied to claims 1-4, 7-9, 11-12 and 15-17 above, and further in view of Suemura et al. (U.S. Patent 6,243,178 B1).

Chang et al. and Tajima have been discussed above in regard to claims 1-4, 7-9, 11-12 and 15-17. The difference between Chang et al. and Tajima and the claimed invention is that Chang et al. and Tajima do not teach the claimed switching device. Suemura et al. teaches in FIG. 8, FIG. 9 and FIG. 10 a multicast switching structure comprising a plurality of splitters 127, one for each wavelength, and a plurality of combiners 129, each of which is connected to a switch element 135. One of ordinary skill in the art would have been motivated to replace the switching system of FIG. 6 of Tajima with the switching system of Suemura et al. in the modified VOD system of Chang et al. and Tajima because the switching system of Suemura allows a receiver to receive multiple wavelengths and, therefore, multiple services, e.g., multiple video channels distributed to different rooms of a household. Thus it would have been obvious



Art Unit: 2633

to one of ordinary skill in the art at the time the invention was made to use the switching system of Suemura in the modified VOD system of Chang et al. and Tajima because the switching system of Suemura allows a receiver to receive multiple wavelengths.

14. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. and Tajima as applied to claims 1-4, 7-9, 11-12 and 15-17 above, and further in view of Bortolini et al. (U.S. Patent Application Pub. 2002/0100056 A1).

Chang et al. and Tajima have been discussed above in regard to claims 1-4, 7-9, 11-12 and 15-17. The difference between Chang et al. and Tajima and the claimed invention is that Chang et al. and Tajima do not teach a hierarchical network structure. Bortolini et al. teaches in FIG. 4 structure of a hierarchical network comprising backbone network 100, a plurality of smaller networks, head ends and plurality of hubs. One of ordinary skill in the art would have been motivated to combine the teaching of Bortolini et al. with the modified VOD system of Chang et al. and Tajima because a hierarchical network provides minimal blocking, wide service area and minimal connecting circuits by concentration. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the modified VOD system Chang et al. and Tajima as part of a hierarchical network comprising backbone network, plurality smaller network, head ends and plurality of hubs, as taught by Bortolini et al., because a hierarchical network provides minimal blocking, wide service area and minimal connecting circuits by concentration.

### ***Conclusion***

Art Unit: 2633

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl

28 August 2005



Shi K. Li  
Patent Examiner